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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/629,486

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Jan I. Ben

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EXAMINER

SAINT CYR, LEONARD

ART UNIT

PAPER NUMBER

2626

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DELIVERY MODE

12/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/629,486	Applicant(s) BEN ET AL.	
	Examiner LEONARD SAINT CYR	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21-30, 32 - 37, 41 -45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 21-30, 32 - 37, 41 -45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/14/08 have been fully considered but they are not persuasive.

Applicant argues that neither Laroche nor Weare et al., nor McEachern teach determining whether said subsequent media program subset exhibits similarities to said initial media program subset (Amendment, pages 12 - 18).

The examiner disagrees, since Weare et al., disclose "a media entity is received by the system and the data is converted from the time domain to the frequency domain. For each frame of data, critical band filtering is performed on the data. Once enough feature vectors are added to the classification chain, the classification chain is ready for operation. The methods also help to **determine media entities that have similar or dissimilar** as a request may indicate, melodic movement by utilizing classification chain techniques" (col.5, lines 15 – 22; col.16, lines 36 – 65).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 33 recites the limitation "said repetition" in lines 2, and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 - 4, 6– 16, 18, 21 – 23, 37, and 41 - 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weare et al., (US Patent 7,065,416) in view of McEachern (US Patent 5,615,302).

Regarding claim 1, Weare et al. discloses a method for program content identification (see col. 6, lines 22-27), said method comprising the steps of:

for each of at least two media program subsets, performing the steps of (col.5, lines 15 – 22):

filtering each first frequency domain representation of blocks of said media program subset using a plurality of filters to develop a respective second frequency domain representation of each of said blocks of said media said second frequency domain representation of each of said blocks having a reduced number of frequency coefficients with respect to said first frequency domain representation program (see col. 16, lines 47, fig. 7, element 750, describing a critical band filtering step which can be modeled as a filter bank, thus indicating that a plurality of filters exist);

grouping frequency coefficients of said second frequency domain representation of said blocks to form segments (see fig. 8A element 804, col. 17, lines 57-60, and col. 16, lines 25-30, where critical band filtering forms several critical bands, interpreted by the examiner as groups); and selecting a plurality of said segments (see col. 18, lines 10-15, where the peaks with the highest energies are selected);

comparing selected segments to features of stored programs to identify thereby said media program subset ("classification of media entities"; Abstract, lines 3 -7);

determining whether said subsequent media program subset exhibits similarities to said initial media program subset (col.5, lines 15 – 22; col.16, lines 36 – 65).

However, Weare et al., do not specifically teach that said plurality of filters have center frequencies logarithmically spaced apart from each other with a logarithmic additive factor of $1/12$.

McEachern teaches this $1/12$ octave filter center frequency spacing results in logarithmically spaced filters that are very closely centered at the frequencies of the linearly spaces harmonics (col.12, line 66 – col.13, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use logarithm filters as taught by McEachern in Weare et al., because that would help better recognize the media content.

Regarding claim 2, Weare et al. further disclose that each grouping of frequency coefficients of said second frequency domain to form a segment represents blocks that are consecutive in time in said media program (see. Col. 18, lines 10-15, since the peaks with highest energies are selected it follows that the segments may be contiguous in time if two highest peaks are positioned consecutively).

Regarding claim 3, Weare et al. further disclose that said plurality of filters are arranged in a group that processes a block at a time, the portion of Said second frequency domain representation produced by said group for each block forms a frame, and wherein at least two frames are grouped to form a segment (see col. 18, where peaks last for multiple frames, thereby having a segment at least two frames).

Regarding claim 4, Weare et al. further disclose that said selected segments correspond to portions of said media program that are not contiguous in time (see col. 18, lines 10-15, since the peaks with the highest energies are selected, it follows that the segments may not be contiguous if a peak that does not meet the criteria "highest" is positioned between two "highest" peaks).

Regarding claim 7, Weare et al. further disclose that the segments selected in said selecting step are those that have largest minimum segment energy (see col. 18, lines 10-15).

Regarding claim 8, Weare et al. further disclose that the segments selected in said selecting step are selected in accordance with prescribed constraints (see col. 18, line 66 - col. 19 line 2, where only selecting peaks that last for more than specified number of frames prevents the peaks from being too close).

Regarding claim 9, Weare et al. further disclose that the segments selected in said selecting step are selected for portions of said media program that correspond in time to prescribed search windows that are separated by gaps (see col. 19, lines 5-10 where frames correspond to search windows, and the frames are individual thus, there is a separation by gaps).

Regarding claim 10, Weare et al. further disclose that the segments selected in said selecting step are those that result in the selected segments having a maximum entropy over the selected segments (see col. 18, lines 12- 15, where the most energetic peaks are chosen, thus choosing the most entropic peaks).

Regarding claims 11- 13, Weare et al. further disclose that the step of normalizing said frequency coefficients in said second frequency domain representation after performing said grouping step, said normalization being performed on a per-segment basis; wherein said normalization includes performing at least a preceding-time normalization; an L2 normalization (“normalizing the sum”; see col. 16, lines 3-6).

Regarding claim 14, Weare et al. further disclose that the step of storing said selected segments in a database in association with an identifier of said media program (see col. 7, lines 59-65, where music is stored in a database and for generating play lists thus an identifier must be associated with the stored data).

Regarding claim 15, Weare et al. further disclose that the step of storing in said database information indicating timing of said selected segments (see col. 9, lines 16-21, where classifying the tempo in the database indicates timing of media segment).

Regarding claim 16, Weare et al. further disclose that said first frequency domain representation of blocks of said media program is developed by the steps of: digitizing an audio representation of said media program to be stored in said database (see col. 16, lines 41-44); dividing the digitized audio representation into blocks of a prescribed number of samples (see col. 16, lines 41-44, where the audio representation is divided into frames); smoothing said blocks using a filter (see col. 16, lines 45-47); and

converting said smoothed blocks into the frequency domain, wherein said smoothed blocks are represented by frequency coefficients (see col. 16, lines 39- 41).

Regarding claim 18, Weare et al. further disclose that each of said smoothed blocks are converted into the frequency domain in said converting step using a Fast Fourier Transform (FFT) (see col. 16, lines 39-41 and col. 23, lines 52-54).

Regarding claims 21 - 23, and 37, Weare et al. discloses identification of content identification (see col. 6, lines 22-27), comprising:

for each of at least two media program subsets, performing the steps of (col.5, lines 15 – 22):

filtering each first frequency domain representation of blocks of said media program subset using a plurality of filters to develop a respective second frequency domain representation of each of said blocks of said media said second frequency domain representation of each of said blocks having a reduced number of frequency coefficients with respect to said first frequency domain representation program (see col. 16, lines 47, fig. 7, element 750, describing a critical band filtering step which can be modeled as a filter bank, thus indicating that a plurality of filters exist);

grouping frequency coefficients of said second frequency domain representation of said blocks to form segments (see fig. 8A element 804, col. 17, lines 57-60, and col. 16, lines 25-30, where critical band filtering forms several critical bands, interpreted by the examiner as groups); and selecting a plurality of said segments (see col. 18, lines 10-15, where the peaks with the highest energies are selected);

However, Weare et al., do not specifically teach that said plurality of filters have center frequencies logarithmically spaced apart from each other with a logarithmic additive factor of $1/12$.

McEachern teaches this $1/12$ octave filter center frequency spacing results in logarithmically spaced filters that are very closely centered at the frequencies of the linearly spaced harmonics (col.12, line 66 – col.13, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use logarithm filters as taught by McEachern in Weare et al., because that would help better recognize the media content.

Weare et al., in view of McEachern do not specifically teach storing at least 30 minutes worth of segments. However, since Weare et al., teach storage collection of media entities, such as media entities that are audio files, or have portions that are audio files (col.5, lines 13 – 18). One having ordinary skill in the art at the time the invention was made would have found it obvious to store at least 30 minutes worth of segments in Weare et al., in view of McEachern, because that would help determine media entities that have similar or dissimilar (col.5, lines 18 – 22).

As per claims 41 – 45, Weare et al., further disclose at least two of said media subsets are associated with the same media program; at least two of said media subsets are associated with different media program ("media entities that are audio files or have portions that are audio files"; Abstract).

5. Claims 24 – 30, 32 - 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laroche (US Patent 6,453,252) in view of McEachern (US Patent 5,615,302), and further in view of Weare et al., (US Patent 7,065,416)

Regarding claims 24, 34, 35, Laroche discloses identification of content identification (see col. 6, lines 22-27), comprising:

for each of at least two media program subsets, performing the steps of (col.5, lines 15 – 22):

filtering each first frequency domain representation of blocks of said media program subset using a plurality of filters to develop a respective second frequency

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domain representation of each of said blocks of said media said second frequency domain representation of each of said blocks having a reduced number of frequency coefficients with respect to said first frequency domain representation program (see fig. 1 and col. 2, lines 36-48);

grouping frequency coefficients of said second frequency domain representation of said blocks to form segments(see col. 2, lines 46-48); and searching a database for substantially matching segments, said database having stored therein segments of media programs and respective corresponding program identifiers (see col. 4, lines 33-34).

However, Laroche et al., do not specifically teach that said plurality of filters have center frequencies logarithmically spaced apart from each other with a logarithmic additive factor of $1/12$.

McEachern teaches this $1/12$ octave filter center frequency spacing results in logarithmically spaced filters that are very closely centered at the frequencies of the linearly spaces harmonics (col.12, line 66 – col.13, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use logarithm filters as taught by McEachern in Laroche, because that would help better recognize the media content.

However Laroche in view of McEachern do not specifically teach determining whether said subsequent media program subset exhibits similarities to said initial media program subset.

Weare et al., teach a media entity is received by the system and the data is converted from the time domain to the frequency domain. For each frame of data, critical band filtering is performed on the data. Once enough feature vectors are added to the classification chain, the classification chain is ready for operation. The methods also help to **determine media entities that have similar or dissimilar** as a request may indicate, melodic movement by utilizing classification chain techniques" (col.5, lines 15 – 22; col.16, lines 36 – 65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine similarities between media entities as taught by Weare et al., in Laroche in view of McEachern, because that would help classify media entities (col.5, lines 7 – 12).

Regarding claim 25, Laroche further discloses that the step of indicating that said media program cannot be identified when substantially matching segments are not found in said database in said searching step (see col. 4, lines 38-42, where the value indicates if there is a true match or not).

Regarding claim 26, Laroche further discloses that said data base includes information indicating timing of segments of each respective media program identified therein (see col. 4, line 64- col. 5, line 5), and wherein a match may be found in said searching step only when the timing of said segments produced in said grouping step substantially matches the timing of said segments stored in said database (see col. 5,

lines 5-10, where fingerprints taken at other maxima will not fit, thus the match will only be found when the timing segments match).

Regarding claim 27, Laroche further discloses that said matching between segments is based on the Euclidean distances between segments (see col. 4, lines 34-38).

Regarding claim 28, Laroche further discloses that the step of identifying said media program as being the media program indicated by the identifier stored in said database having a best matching score when substantially matching segments are found in said database in said searching step (see col. 4, lines 38-42, where the match is determined by the smallest value, where larger values may match substantially, but are not indicated as the best match).

Regarding claim 29, Laroche further discloses that the step of determining a speed differential between said media program and a media program identified in said identifying step (see col. 3, lines 64-67, where two signals can differ by a slowly time-varying function).

Regarding claim 32, Laroche further discloses that said determining step is based on an overlap score (see claim 6, where an identifying method is claimed based on a segment divided into overlapping frames).

Regarding claim 36, Laroche further discloses that said first frequency domain representation of said media program comprises a plurality of blocks of coefficients corresponding to respective time domain sections of said media program (see col. 2, lines 36-40) and said second frequency domain representation of said media program comprises a plurality of blocks of coefficients corresponding to respective time domain sections of said media program (see col. 2, lines 42-48).

Regarding claims 30, and 33, Laroche in view of McEachern, and further in view of Weare et al., do not disclose wherein said matching score for a program P.sub.i is

$$P_i = \frac{1}{Z} \sum_{j=1}^Z f(S'_{j+1} - S_j(P_i)).$$

determined by

However, since Weare et al., teach nearest neighbor and/or other matching algorithms may be utilized to locate songs that are similar...a confidence level for song classification may also be returned (col.8, lines 1 – 10). One having ordinary skill in the art at the time the invention was made would have found it obvious to use a matching score in Laroche in view of McEachern, and further in view of Weare et al., because that would help classify media entities (col.5, lines 7 – 12).

6. Claims 5, 6, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weare et al., (US Patent 7,065,416) in view of McEachern (US Patent 5,615,302), and further in view of Rahim et al.,(US Patent 7181399)

Regarding claims 5, 6, 17, and 19, Weare et al. in view of McEachern do not specifically disclose wherein said plurality of filters includes at least a set of triangular filters; said smoothing step is a Hamming window filter; smoothed blocks are converted into the frequency domain in said converting step using a Discrete Cosine Transform (DCT).

Rahim et al., teach each frame is hamming windowed, Fourier transformed and then pass passed through a set of twenty-two triangular band-pass filters. Twelve mel cepstral coefficient are computed by applying the inverse discrete cosine transform (col.4, lines 15 – 22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use triangular filters as taught by Rahim et al., in Weare et al. in view of McEachern, because that would improve the degree of smoothing of different blocks.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD SAINT CYR whose telephone number is (571) 272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Richemond Dorvil/

Supervisory Patent Examiner, Art Unit 2626